least an additional 6% by weight of carbon source during the culturing, thereby forming arachidonic acid or a lipid containing arachidonic acid;

(2) collecting the cultured cells; and

(3) extracting arachidonic acid or a lipid containing arachidonic acid from the collected cells;

E1 wherein the microorganism produces arachidonic acid of at least about 7 g/L culture medium when cultured in a medium containing at least about 4% carbon source at the start of culturing and the addition of at least an additional 6% by weight of carbon source during the culturing, and at least about 2% nitrogen source at the start of culturing for 5 to 10 days with agitation and aeration.

33. (Amended) A process for producing arachidonic acid or a lipid containing arachidonic acid comprising the steps of:

(1) culturing a microorganism, belonging to the species *Mortierella alpina* and having resistance to a carbon source of high concentration, in a medium having a carbon source concentration of at least 4% by weight at the start of culturing and the addition of at E2 least an additional 6% by weight of carbon source during the culturing, thereby forming arachidonic acid or a lipid containing arachidonic acid;

(2) collecting the cultured cells; and

(3) extracting arachidonic acid or a lipid containing arachidonic acid from the collected cells;

wherein the microorganism produces arachidonic acid of at least about 7 g/L culture medium when cultured in a medium containing at least about 4% carbon source at the start of culturing and the addition of at least an additional 6% by weight of carbon source during the culturing, and at least about 2% nitrogen source at the start of culturing for about 5 to 10 days with agitation and an aeration rate of at least about 1 vvm.

Please add new claim 34 as follows:

34. (New) A process for producing arachidonic acid or a lipid containing arachidonic acid comprising the steps of:

(1) culturing a microorganism of strain *Mortierella* SAM 2197 and having resistance to a carbon source of high concentration, in a medium having a carbon source concentration of at least 4% by weight at the start of culturing and the addition of at least an additional 6% by weight of carbon source during the culturing, thereby forming arachidonic acid or a lipid containing arachidonic acid;

(2) collecting the cultured cells; and

(3) extracting arachidonic acid or a lipid containing arachidonic acid from the collected cells;

wherein the microorganism produces arachidonic acid of at least about 7 g/L culture medium when cultured in a medium containing at least about 4% carbon source at the start of culturing and the addition of at least an additional 6% by weight of carbon source during the culturing, and at least about 2% nitrogen source at the start of culturing for 5 to 10 days with agitation and aeration.